Chapter 10 O&M Frontiers

As old a topic as O&M is, there are a number of new technologies and tools targeting the increased efficiency of O&M. As with most new technology introduction, these tools are in various stages of commercialization; for up-to-date information on each tool, contact information is provided in this chapter.

As previously mentioned, we are not able to provide a detailed description of all tools and technologies available. What we do provide are some of the more common tools that are currently, or nearly, commercially available. To locate additional resources, the authors of this guide recommend contacting relevant trade groups, databases, and the world-wide web.

10.1 ACRx Handtool/Honeywell HVAC Service Assistant

Developed by Field Services, Inc., and now marketed by Honeywell as the "HVAC Service Assistant," this tool was designed to provide diagnostics for rooftop HVAC equipment. The tool combines a handheld PDA and multiple pressure/temperature gauges into a single tool that provides expert diagnostic analysis of HVAC equipment to the service technician. This unit automates the detection and diagnosis of problems difficult to identify in compressors, heat exchangers, and expansion valves.

More information about the HVAC Service Assistant

Contact Honeywell at: (800) 345-6770, ext. 7247
www.customer.honeywell.com or www.honeywell.com/building/components.

10.2 Decision Support for O&M (DSOM®)

The DSOM® tool is a condition-based O&M hardware and software program designed to provide facility staff with intuitive actions to implement efficient, life-cycle asset management. DSOM was developed by researchers at the U.S. Department of Energy's Pacific Northwest National Laboratory (PNNL).

Based on the concept of condition-based management, DSOM focuses on finding the balance between high-production rates, machine stress, and failure. DSOM allows online condition monitoring of equipment and provides early warning signs of degraded performance. DSOM's diagnostic capabilities empower the operations staff to become the first line of maintenance. Moreover, a customized, integrated database, and intuitive access system provide the information all staff need to make informed decisions about how to operate their plant more effectively. Dramatic savings are achievable because DSOM (1) improves process efficiency, (2) cuts maintenance costs, (3) extends equipment life, and (4) reduces energy consumption and associated harmful emissions.

The DSOM technology was developed under government research funding from the U.S. Department of Energy. In 1994, it was installed at the central heating plant of the Marine Corps' Air Ground Combat Center in Twentynine Palms, California. Implementation at Twentynine Palms established proof of principle and verification of value. Recent installations have been completed at Marine Corp Recruiting District Parris Island and a large metropolitan housing project.

More information about DSOM

Contact Dick Meador (509) 372-4098
www.pnl.gov/dsom/.

10.3 ENFORMA® Portable Diagnostic Solutions

ENFORMA HVAC and lighting analyzer was developed by Architectural Energy Corporation (AEC). This hardware/software system relies on AEC's data loggers or an existing energy management system to collect HVAC, controls, and lighting performance data. Once collected, the ENFORMA software enables the analyst to diagnose significant HVAC problems, address comfort issues, and track and verify savings related to equipment retrofits.

More information about ENFORMA

Contact Architectural Energy Corporation at: (303) 444-4149
www.archenergy.com

10.4 Performance and Continuous Commissioning Analysis Tool (PACRAT)

PACRAT is a versatile diagnostic tool developed by Facility Dynamics Engineering to detect problems with HVAC equipment. This tool is designed to provide automated diagnostic capabilities for air handlers, zone distribution systems, chillers, hydronic systems, and whole-building energy use. PACRAT makes use of time-series data collected by existing energy management and control systems (EMCS) or other data-logging equipment. Once collected, the data are processed making use of an extensive automation of expert rules to assess HVAC system performance (Friedman and Piette 2001). PACRAT is designed to calculate and report deviations from baseline operation and estimate the resulting cost of wasted energy.

More information about PACRAT

Contact E. Lon Brightbill (410) 290-0900
www.facilitydynamics.com/

10.5 The Whole-Building Diagnostician (WBD)

The Whole-Building Diagnostician (WBD) is a modular diagnostic software system that provides detection and diagnosis of common problems associated with the operation of HVAC systems and equipment in buildings. The WBD tracks overall building energy use, monitors the performance of air-handling units, and detects problems with outside-air control. This tool uses time-series data as collected by an EMCS or other data-logging equipment. Its development is part of the commercial buildings research program of the U.S. Department of Energy's Office of Building Technology, State and Community Programs.

More information about WBD

Contact Michael Brambley (509) 375-6875
www.buildingsystemsprogram.pnl.gov/

10.6 Reference

Friedman, H. and M.A. Piette. 2001. *Comparative Guide to Emerging Diagnostic Tools for Large Commercial HVAC Systems*. LBNL No. 48629, Lawrence Berkeley National Laboratory, Berkeley, California.